

## ABSTRACT OF THE DISCLOSURE

A high-speed, high-performance optical modulator operating with a reduced drive voltage without sacrificing modulation bandwidth. The modulator has an optical waveguide fabricated on a crystal substrate. A signal electrode is on a ridge on the substrate. Ground electrodes are formed on both sides of the signal electrode. A gap between the signal and ground electrodes is at least 44  $\mu\text{m}$ , and an interaction length of the signal electrode is at least 41 mm. The modulator can operate at 40 Gbps or higher.